

THE NUTRITION FOUNDATION, INC.

A BALANCED DIET

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A Balanced Diet



THE NUTRITION FOUNDATION, INC.
Chrysler Building, New York, N. Y.

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Balanced Diet

Prepared for The Nutrition Foundation
by

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BALANCING THE DIET, like balancing the budget, is fast becoming a common expression in our time. We're often asked, "Are you eating a balanced diet?" or told, "You should eat a diet that is balanced."

What is a balanced diet? Why should it be balanced? What is being balanced?

A balanced diet is simply a variety of foods which supply all of the nutrients* needed for good health and supply these nutrients in their proper amounts and in proper relation to each other. We know that a team of nutrients functions more effectively than the same nutrients if they are eaten separately. A diet should be balanced because such a diet provides better nutrition than an unbalanced diet. A well-balanced diet is also more economical because of the fact that it is better utilized, less is wasted by the body, and the net result is better health.

*Single ingredients of food having nutritional value, such as iron or vitamin A.



In the present state of our knowledge there are fifty to sixty known nutrients and, undoubtedly, there are more to be discovered. Actually, it would be almost impossible to balance the diet down to the very last milligram. But for practical purposes it is possible to balance the diet by selecting a combination of foods that provides all of the dietary essentials known.

Nutrients are generally grouped into a few large categories depending on their chemical formulas or characteristics and their functions in the body. There are six main food groups which make up the balanced diet, and practically every food contains several or all of these groups but in varying amounts. These six main groups are carbohydrates, fats, proteins, vitamins, minerals, and water. The first three of these groups — *carbohydrate*, *fat*, and *protein* — contribute calories (fuel or energy). Carbohydrate foods (sugars and starches) are the cheapest source of energy. Fats yield about twice as many calories as do the same amounts of either carbohydrate or protein. Most of the total calories in a diet are furnished by carbohydrate and fat. The primary function of protein is the building of body tissues and their repair and maintenance. Protein is made up of amino acids, which are often called the body's "building blocks." Of the twenty-two or so amino acids, only eight are not synthesized by the body in sufficient amount, and these are called the "essential" amino acids for man. They must be supplied by the diet so that the building and repairing processes can go on. Also the diet must contain enough carbohydrate and fat to furnish adequate calories so that the amino acids may be "spared" to do their vital work. Otherwise, if there is an insufficiency or an imbalance of the other food groups, the protein will be burned for fuel.

Vitamins and minerals must also be balanced. Each vitamin and mineral has its own particular job to perform in the body's metabolism or operation. In a balanced diet, sufficient vitamins and minerals are furnished by the foods so that the individual in good health does not need concentrated sources as provided by vitamin pills.

The functions of all the nutrients are interrelated. For instance, carbohydrate must be accompanied by thiamine (vitamin B₁) and other vitamins and minerals in order to be utilized properly; there must be some fat in the diet for the absorption of certain vitamins as well as to supply calories. No one food contains all of these essential nutrients in the desirable amounts, so there is no food that is a balanced meal by itself, except in the case of mother's milk for newborn infants.

All of this balancing sounds very complicated and it is, particularly if it is defined or explained in too much detail. But in practical nutrition, balancing of the diet means a selection of foods at each meal to provide (1) all of the essential amino acids, (2) sufficient calories from carbohydrate and fat so that no appreciable part of the protein need be utilized for energy, (3) vitamins and minerals to carry out the chemical reactions of body metabolism, (4) only enough calories to maintain desirable weight.

Water

Water furnishes no calories or vitamins, but it may provide various minerals. For example, hard water may contribute appreciable amounts of calcium. Some waters contain fluorine in sufficient amounts to lessen dental decay. Water functions in almost every phase of body metabolism. Most of the body cell constituents must dissolve in water before they can react with each other and become body tissue, therefore water is essential to tissue building. A large proportion of all body fluids, including blood and urine, is water. Water is a body regulator — it helps regulate body temperature, and it is needed for normal intestinal function. Lots of water is lost from the body each day, and in order to replace this loss everyone needs to drink at least six glasses of water or its equivalent every day in addition to the water obtained from foods.

Fiber

Fiber is an ingredient of the diet that is not usually included among the main food groups or the many nutrients comprising these groups. Strictly speaking, "animal" fiber (such as found in meats) has nutritional value since it may sometimes be absorbed and used by the body. The largest source of fiber (cellulose, bulk, roughage) in a normal diet is of vegetable origin. This type of fiber is not digested, and its main function is stimulation to the intestinal muscles for proper evacuation of waste materials. The occurrence of considerable bulk in the diet aids the absorption of nutrients in the small intestine. Fiber and pectin-like materials also promote a favorable growth of bacteria in the intestinal tract. In a balanced diet, bulk occurs in the form of whole grain (dark) breads and cereals, and the skin and fibrous parts of fruits and vegetables. Bran is well known for its fiber content.

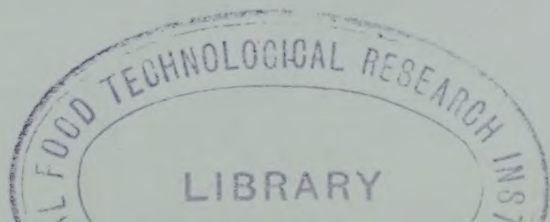
Suggestions for Balanced Meals

It is simple to obtain balanced meals if a few principles of common-sense nutrition are known and practiced:

1. Eat a variety of food and a variety at each meal.
2. Balance calories as well as the rest of the diet by maintaining weight within the range of desirable weight for height and type of body frame.
3. Use protective foods (enriched and whole grain breads and cereals, meat, fish, milk, eggs, legumes, green leafy and yellow vegetables, fruits).

Variety is the keynote in selecting a balanced diet. In fact, variety in food consumption is the best practical means of providing a nutritious diet. Here are two examples to illustrate the importance of using several foods at one meal:

EXAMPLE 1: Flour and cereal products are economical sources of calories. The enriched or whole grain products contribute appreciably to the vitamin and mineral intake, but their protein is low in the essential amino acid lysine. However, these foods are usually eaten along with milk or



some other animal protein food which supplies the lysine as well as adding to the vitamin and mineral intake. In this way, the amino acids of the vegetable food are supplemented by lysine, and form a "complete" protein containing all of the essential amino acids.

EXAMPLE 2: Citrus fruits and their juices are probably the best and most used sources of foods furnishing the nutrient ascorbic acid (vitamin C) in American dietaries, but they furnish no other nutrients in comparable amounts except calories from the fruit sugar present. A 4-ounce glass of orange juice might average 60 milligrams of ascorbic acid and 50 calories. The same amount of tomato juice provides about half this amount of ascorbic acid but in addition significant amounts of carotene which the body can make into vitamin A. Prunes or prune juice contribute insignificant amounts of ascorbic acid but are a good source of the essential minerals iron and copper. Thus by using these three fruits in variety one receives ascorbic acid, carotene, iron, copper, and calories.

Variety in meals also helps to make them palatable and attractive. Use a variety of well-selected and well-prepared foods each day.

Translating Nutrients Into Balanced Meals

The following menus are just an illustration of how the nutrients can be translated into three varied, balanced meals a day. Every day the "basic" foods which supply the essential nutrients are included:

Milk and milk products.

Meat, egg, fish, dried beans, and other legumes.

Whole grain and enriched breads and cereals.

Green leafy and yellow vegetables.

Fruits, including citrus fruits or other foods containing vitamin C.

Fat (including butter, or enriched margarine for vitamin A content).

Potatoes and other vegetables.

Sunday

BREAKFAST

Cantaloupe halves

Shredded wheat, milk

Cinnamon rolls, butter

Beverage

DINNER

Grape juice fizz (with ginger ale)

Roast turkey with herb dressing, giblet gravy

Sweet potato puff

Boiled onions

French green beans

Hard rolls, butter or margarine

Raw cranberry relish

Peaches and cream

Beverage

SUPPER

Toasted cheese sandwich

Sliced tomatoes and cucumbers

Chocolate fudge cake
with peppermint frosting

Milk

Monday

BREAKFAST

Half grapefruit or juice
Cold cereal, milk
Scrambled eggs, bacon
Whole wheat toast, butter or margarine
Beverage

LUNCH

Open-faced toasted turkey sandwich
with lettuce and tomato
Cranberry sauce
Chocolate pudding Cookie
Milk

DINNER

Braised beef liver and onions
Parsley potatoes Buttered beets
Molded vegetable salad
French dressing
Cloverleaf rolls, butter or margarine
Honeydew melon with lemon wedge
Beverage

Tuesday

BREAKFAST

Orange juice
Hot cereal, milk
French toast Syrup Butter
Beverage

LUNCH

Vegetable-beef soup
Crackers
Tossed greens with lemon and vinegar
Ginger pumpkin pie
Milk

DINNER

Vegetable juice cocktail, crackers
Turkey in casserole
Glazed carrots
Baking powder biscuits Plum preserve
Fruit salad, fruit whip dressing
Beverage

Wednesday

BREAKFAST

Orange-grapefruit juice or sections

Cold cereal, milk

Soft boiled eggs, bacon

Toasted biscuits, jelly

Beverage

LUNCH

Cream of tomato soup

Peanut butter-pickle sandwich
on rye bread

Fresh fruit cup

Cookie

Milk

DINNER

Pan broiled pork chop with apple slice

Paprika potato cakes

Buttered asparagus

Raw cauliflower and carrot strips

Ice Cream

Beverage

Thursday

BREAKFAST

Pineapple juice
Hot cereal, milk
Toasted English muffins
Butter Jelly
Beverage

LUNCH

French omelet with creole sauce
Buttered Swiss chard
Popovers, butter
Half grapefruit with mint ice
Milk

DINNER

Pot roast of beef
Carrots Onions
Oven browned potato
Green pepper cheese salad
Butterflake rolls, butter
Pecan cupcake
Beverage

Friday

BREAKFAST

Tomato juice
Cornflakes, milk
Poached egg on toast
Toast, butter or margarine
Beverage

LUNCH

Dried pea soup with ham
Cheese crackers
Raw greens with chopped carrot and cucumber
Enriched bread, butter
Buttercrunch ice cream
Milk

DINNER

Broiled fish, lemon butter sauce
Hashed brown potatoes, buttered beet greens
Banana macaroon salad with watermelon cubes,
cream dressing
Hard rolls Butter Raspberry jam
Crackers Assorted cheeses
Beverage

Saturday

BREAKFAST

Stewed prunes
Shredded wheat, milk
Blueberry muffins, butter or margarine
Beverage

LUNCH

Salad bowl
(greens, strips of cheese, carrot, hard cooked egg, pimento)
Potato chips
White bread and butter sandwiches
Milk

DINNER

Fruit juice cocktail, pretzels
Baked beans, frankfurters
Broiled tomatoes Pineapple coleslaw
Relishes Apple pie
Beverage

Snacks between meals and at bedtime are a habit with many of us. If you are of desirable weight, any snack desired may be acceptable. If you are underweight, some of the much-needed calories can be added by taking a sandwich and milk or a beverage such as grape juice at bedtime. However, if you are above desirable weight, be sure that the snacks are included as part of your reducing diet. Some people find it less difficult to maintain a reducing diet if the meals are divided to permit between-meal and bedtime snacks.

The Energy Balance

No mention was made of portion size or second helpings in the menus. But amounts are important, of course, because they have a direct bearing on the caloric intake and body weight.

Obesity is a serious health problem in our country. Life insurance statistics point a ghostlike finger at heart disease and other killing diseases which frequently accompany obesity. Not only does obesity favor an early death, but it favors the early onset of many "aches and pains." Muscles and joints that have to support an unnecessary twenty pounds, or more, frequently rebel at this extra work.

Overweight comes from overeating. Too many calories, rather than a peculiar physiology, can be blamed for excessive body weight. Energy balance in the field of nutrition means a balance of caloric intake with caloric output. Caloric intake means the calories from the food eaten, and caloric output is the energy expended by the body when it runs, eats, sleeps. A person who maintains steady weight (be it 110 or 200 pounds) eats approximately the same amount of calories as he spends for energy. If a person eats more calories than he can use, he stores the excess as fat; conversely, if less calories are eaten than the body needs for energy, weight will be lost, for body fat will be burned.

The best menus for losing weight follow the same pattern as those for the normal weight person, that is, the reducing menus contain all the protective foods. One of the most im-

portant features in a reducing regimen is simply eating less of everything to the extent that weight is lost. There is no single food that must be banned in a reducing diet. Although potatoes and bread are often accused of making a person "fat," they are important foods and should not be left out of the diet entirely. Most people, in order to lower the calorie content of the diet sufficiently to lose weight, should limit themselves to *small servings* and should *omit second helpings*. It is also helpful in reducing to step on the scales regularly — preferably weekly and at the same time of day. Keep a written record of weight. Daily weighing may show considerable fluctuations and therefore be discouraging.

As with everything else, there are some tricks of the trade in reducing. The spacing of food consumption throughout the day can influence the physiologic and psychologic mechanisms that regulate appetite. It is not the intent of this booklet to discuss weight reduction in detail. One precaution is urged, however — don't follow a quack or faddist in attempting to reduce weight.

To be in the best of health, everyone should adjust weight so as to stay within the range of desirable weight. Desirable weights are given in the following tables and are based on statistical studies of the Metropolitan Life Insurance Company. The tables give the range of weights favoring long life. They turn out to be the average weights for the various heights and the three types of body frame at age 25 (if there is doubt as to what body build you are, use "medium frame").

While it has been known "for ages" that overweight individuals have a shorter life span, as well as being more susceptible to a great variety of diseases, it is only within the past year that evidence has been presented showing that individuals who are overweight and reduce, improve their health. Not only is health improved, but individuals who succeed in reducing actually will live longer than they would have lived had they continued to be overweight. These recent findings give the overweight individual a strong stimulus to reduce.

Desirable Weights

FOR MEN AND WOMEN OF AGES 25 OR OVER*

Weight in Pounds According to Frame (as Ordinarily Dressed)

MEN

HEIGHT

(with shoes on, assuming a one-inch heel)

FEET	INCHES	SMALL FRAME	MEDIUM FRAME	LARGE FRAME
5	2	116-125	124-133	131-142
5	3	119-128	127-136	133-144
5	4	122-132	130-140	137-149
5	5	126-136	134-144	141-153
5	6	129-139	137-147	145-157
5	7	133-143	141-151	149-162
5	8	136-147	145-156	153-166
5	9	140-151	149-160	157-170
5	10	144-155	153-164	161-175
5	11	148-159	157-168	165-180
6	0	152-164	161-173	169-185
6	1	157-169	166-178	174-190
6	2	163-175	171-184	179-196
6	3	168-180	176-189	184-202

WOMEN

HEIGHT

(with shoes on, assuming a two-inch heel)

FEET	INCHES	SMALL FRAME	MEDIUM FRAME	LARGE FRAME
4	11	104-111	110-118	117-127
5	0	105-113	112-120	119-129
5	1	107-115	114-122	121-131
5	2	110-118	117-125	124-135
5	3	113-121	120-128	127-138
5	4	116-125	124-132	131-142
5	5	119-128	127-135	133-145
5	6	123-132	130-140	138-150
5	7	126-136	134-144	142-154
5	8	129-139	137-147	145-158
5	9	133-143	141-151	149-162
5	10	136-147	145-155	152-166
5	11	139-150	148-158	155-169

* These tables are based on numerous medico-actuarial studies of hundreds of thousands of insured men and women.

Hot vs. Cold Foods

Should a meal be hot to be balanced? Not necessarily; the temperature of food as served has nothing to do with its nutritional value. It isn't necessary to have a hot school lunch to have a well-balanced lunch. But some foods are more palatable if served hot, thereby offering greater opportunity for a varied diet. The following is a balanced meal plan for one day made up of only cold foods.

BREAKFAST

Grapefruit sections

Cornflakes, milk

Muffins, butter

Milk

LUNCH

Salad bowl with greens,
cottage cheese, tomato wedges

Whole wheat wafers, butter

Baked apple with cream

Cookie

DINNER

Cold sliced ham

Stuffed hard cooked eggs

Mixed vegetable salad

(cooked corn, peas, carrots, green beans)

with mayonnaise

Potato sticks

Rolls

Butter

Lemon meringue pie

Iced tea, coffee or milk

Here are three additional lunches, all cold but all good selections for a balanced diet:

(1)

Stuffed tomato salad
(with chicken or tuna fish)
Bread and butter sandwiches
Mixed fruit cup Cookies
Milk frappe

(2)

Cold sliced veal or chicken
Potato salad with radishes
Tossed green salad with herb dressing
Hard rolls, butter
Strawberry mousse
Iced tea, coffee or milk

(3)

Ham sandwich loaf
(made with ham, pimento, egg, pickles, mayonnaise,
cream cheese)
Carrot strips, sliced cucumbers
Potato chips
Fresh pineapple wedges
with powdered sponge cake
Milk, iced tea or coffee

How to Balance the Meals for All Age Groups

What has been written so far applies to a balanced diet and good nutrition for adults. But it can be adopted readily for children, adolescents, and old folks. Only a few changes need to be made:

Children under 5 and adolescents (from about age 10 to 19) are rapidly growing individuals and need more of some nutrients than adults. Second helpings of the same foods (when the appetite calls for them) and milk products particularly, will meet the increased requirements for protein, calcium, and vitamin A. Adolescents need more ascorbic acid, so extra fruit and vegetables high in ascorbic acid (citrus fruits, raw cabbage, tomatoes) should be given. It should also be remembered that in feeding children, particularly the very young, we are also developing attitudes toward food. A happy atmosphere with no forcing or argument is just as important as the provision of all the nutrients for learning good food habits.

Pregnancy and Lactation

Today most women are aware that what they eat during pregnancy directly affects the health of their baby. Eating too much is likely to interfere with the course of pregnancy, labor, and even delivery. Eating too little will result in poor nutrition for the mother, and the baby will also suffer. The pregnant woman has reasons for eating more food than normally, but she doesn't need to (and shouldn't) eat twice as much. The foods to increase are the protective foods. During pregnancy she should increase her milk intake to one quart daily and eat more of the other protein foods (meat, fish, cheese, eggs, dried beans), more green and yellow vegetables, foods high in ascorbic acid, and whole grain and enriched breads and cereals.

The lactating mother requires increased amounts of food. Her own body needs optimum nutrition; there has to be an increase in calories and protein for the production of milk

sufficient for the infant. During lactation a mother needs $1\frac{1}{2}$ quarts of milk plus the increased amounts of protective foods demanded in pregnancy. The large quantity of milk that is required does not necessarily mean that it has to be drunk as milk — part of it can be used on cereals, in coffee, on desserts, in puddings, casseroles, cream sauces, and the like.

Old People

Old folks who have restricted activity do not need as many calories as they did when they were physically active. Calories can be reduced by having smaller servings of the same menus already given. Variety in food consumption and consistent use of protective foods remain important. The nutrition of old folks is frequently complicated by lack of funds to purchase enough food, lack of teeth to chew, impaired intestinal absorption, and lack of interest in obtaining good nutrition. “Bachelor’s scurvy” and “widow’s anemia” are frequently due to boredom and lack of interest in obtaining a good diet. But so far as is known, old age adds no unusual requirements for nutrients.

A Balanced Diet — Research, Education

Nutrition is the science of food and its relation to health. It is the most important environmental factor concerned with health. Man can survive with poor shelter and inadequate clothing, but not without food. The importance of nutrition goes deep into the cultural patterns of races and peoples. From birth to death, food influences man’s destiny. Food has influenced much of the world’s history. Today, as in pre-historic times, man’s savagery is largely prompted by hunger. The pangs of hunger and fears of famine affect moral and political judgment.

When, in the early days of the twentieth century, nutrition gained recognition, there was a tendency to seize upon it as a panacea. The result was a flood of unsound theories. Fads in foods and diets sprang up overnight to win great popularity

and then to disappear almost as quickly. Faddists still do injury to the public, to the medical profession, and to the food industry, but their influence is sharply diminished by reliable research and education.

In the midst of this confusion, it was recognized that sound research was necessary — and research, fundamental and applied, financed by great universities, by industry, and by government, flourished in the field of nutrition.

Within the past twenty years, the science of nutrition has made sound and stable advances — greater progress than in all the preceding centuries.

Discovery of the vitamins and their manifold relation to the health of the body came from biochemists working on problems of nutrition.

The action of nutrients in the blood stream and in the body tissues has been explored and much information gained bearing on human health.

New knowledge has been acquired relative to the requirements of man for many of the nutrients, particularly the vitamins, minerals, and amino acids.

Diseases such as diabetes and liver injury have been controlled and treated through utilization of modern nutrition. Hardening of the arteries and high blood pressure, the greatest killers of present-day Americans, are diseases in which nutrition is somehow intimately concerned.

Guarding the life of the mother and child, nutrition has played an important part in prenatal care. Its importance is paramount in preoperative and postsurgical care. It has been recognized as the prime factor in developing the health of children and in maintaining the health of the aged.

Yet, much remains to be done in nutrition, in research for new knowledge, in teaching leaders who can carry forth the present knowledge of this science, and in service and practice through communities, hospitals, industries, health departments and state and federal extension agencies.

In the final analysis good nutrition means a balanced diet and, as such, has a direct effect on the health and happiness of every man, woman and child.

Hints for Good Diets

Here is a short table showing what foods are particularly good sources of some of the necessary nutrients.

PROTEIN — Meat, milk, eggs, fish, poultry, cheese, legumes, nuts.

CALCIUM — Milk, cheese, greens such as kale and broccoli, nuts, legumes.

IRON — Liver, meat, molasses, egg yolk, enriched and whole grain breads and cereals, legumes, green leafy vegetables, dried apricots and prunes.

VITAMIN A—and **CAROTENE**—Green and yellow vegetables, apricots, peaches, tomato, cantaloupe, egg yolk, whole milk, butter, fortified margarine, fish liver oils, liver.

VITAMIN D — There are no outstanding food sources of this nutrient. Adults require only minute quantities of this vitamin; infants, children and pregnant women need more and that is why we have fish liver oil concentrates and vitamin D fortified foods, particularly milk.

THIAMINE — Pork, liver, legumes, nuts, enriched and whole grain cereals, milk, meat, eggs, green leafy vegetables.

RIBOFLAVIN—Milk, cheese, liver, legumes, green leafy vegetables, meat, eggs.

NIACIN — Liver, meat, poultry, legumes, nuts, peanut butter, enriched and whole grain breads and cereals.

ASCORBIC ACID — Citrus fruit juices, cantaloupe, strawberries, raw cabbage, tomato, green leafy vegetables.

To choose a balanced diet, select foods which contain these necessary food items. Some of the minerals and vitamins are soluble in water, so care must be taken in preparation. Cook in as little water as possible; cook with skins on when possible. Any water that is left after the vegetables are cooked should be used in gravies, soups, and sauces. Canned and frozen vegetables and fruits have essentially the same nutritional

value as fresh vegetables and fruits. In fact, they are a better source of vitamins and minerals than properly cooked fresh vegetables.

Here are some common mistakes that may explain why diets are not balanced:

1. Skimping or omitting breakfast.
2. Too many calories.
3. Poor variety.
4. Lack of milk or milk products.
5. Lack of vegetables and fruits.
6. Spending too large a portion of the budget on one or a few food groups so that other items are neglected.
7. Improper preparation — losing the minerals and vitamins in the cooking water.

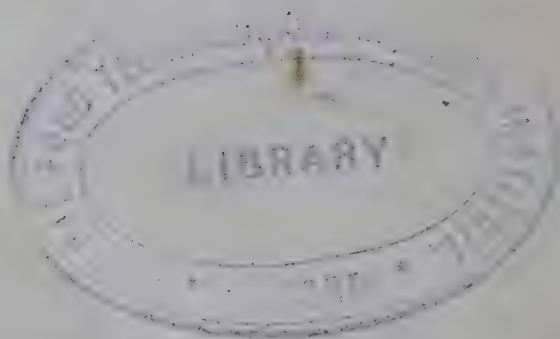
Was your diet balanced today? If not, you can balance it tomorrow and the next day by following the principles of nutrition and common sense mentioned in this booklet.

Summary

A diet varied in food intake at each meal, properly prepared and consumed in such quantities as to obtain and maintain desirable weight, will generally be a balanced diet. This diet should include all of the protective foods such as meat, fish, milk, eggs, fruits, vegetables, enriched and whole grain breads and cereals. A balanced diet is important for good health because nutrition is an important factor in the growth, function, maintenance, and repair of all the cells of the body. As such, it is the most important environmental factor affecting health. Every citizen interested in improved health from a purely personal basis or from a national or international point of view should be interested in, know something about, and practice better nutrition.

NUTRITION

is the most important environmental factor
in the health of the American people.



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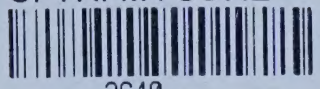
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